

Municipal Water Demand Update

West Basins Planning Area
Stakeholders Meeting
July 27, 2016

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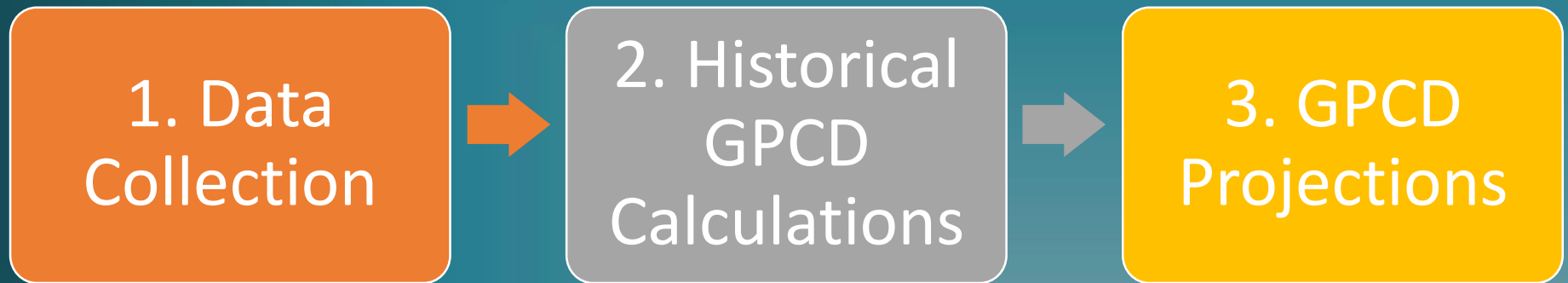


PROTECTING
ARIZONA'S WATER SUPPLIES
for **ITS NEXT CENTURY**

List of Abbreviations

- GPCD = Gallons Per Capita Per Day
 - The number of gallons of water used by each individual person per day
- ACC = Arizona Corporation Commission
- CWS = Community Water Systems
- CWS + ACC = CWS and ACC data averaged together

Methodology



1. Data Collection

- Data was collected from each water provider that reported their annual use to the ACC and/or ADWR
 - ACC Report Years: 2012-2015
 - CWS Report Years: 2006-2015
- Sources
 - ACC Annual Reports
 - CWS Annual Reports
 - US Census

1. Data Collection

- The following data were acquired from ACC and CWS annual reports*:
 - Water Provider Name
 - Year Reported
 - Number of Connections/Customers
 - Acre Feet of Water Pumped
- The following data were acquired from the US Census:
 - People per Housing Unit (pphu) for La Paz and Maricopa Counties
 - Population Projections based on 2010 Census data

*ACC and CWS Annual Reports are all self-reported and unverified

2. Historical GPCD Calculations

1. The number of connections/customers were converted to population
 - $(\# \text{ Connections})(pphu)$
 - NOTE: The pphu used depended on which county the water provider served
 - La Paz County pphu = 2.07
 - Maricopa County pphu = 2.74
 - Example:

County Served	Year	# Customers	Population
Maricopa	2012	313	857
	2013	312	854
	2014	311	852
	2015	311	852

2. Historical GPCD Calculations

2. GPCD was calculated for each provider for each year they reported their use

- $\left(\frac{AF}{population}\right)\left(\frac{325,851 \text{ gallons}}{365 \text{ days}}\right)$
- Example:

County Served	Year	Population Served	AF Pumped	GPCD
Maricopa	2006	753.5	88.79	105.20
	2007	772.68	94.08	108.70
	2008	783.64	80.83	92.08
	2009	794.6	81.98	92.11
	2010	780.9	75.72	86.56
	2011	780.9	75.67	86.51
	2012	778.16	75.92	87.10
	2013	761.72	72.59	85.08
	2014	761.72	74.32	87.10
	2015	780.9	77.10	88.14

2. Historical GPCD Calculations

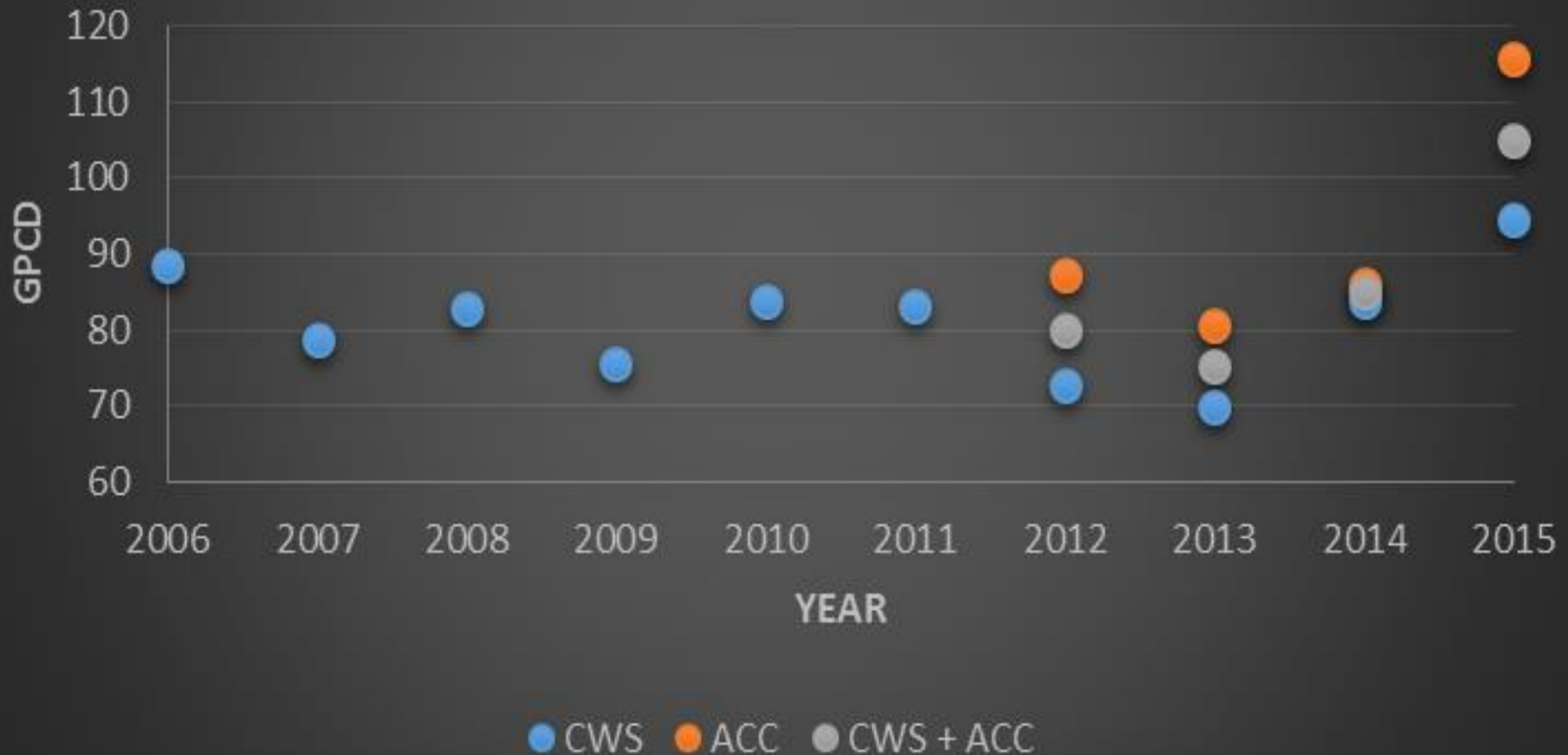
3. The GPCDs for each water provider were averaged for each reporting year

■ Example:

ACC			
Year	AF Pumped	Population	GPCD
2012	198.14	2027.25	87.25
2013	184.56	2046.01	80.53
2014	198.31	2054.60	86.17
2015	128.07	988.23	115.69

4. These annual averages for the ACC and CWS became our historical GPCDs

West Basins Historical GPCD (2006-2015)

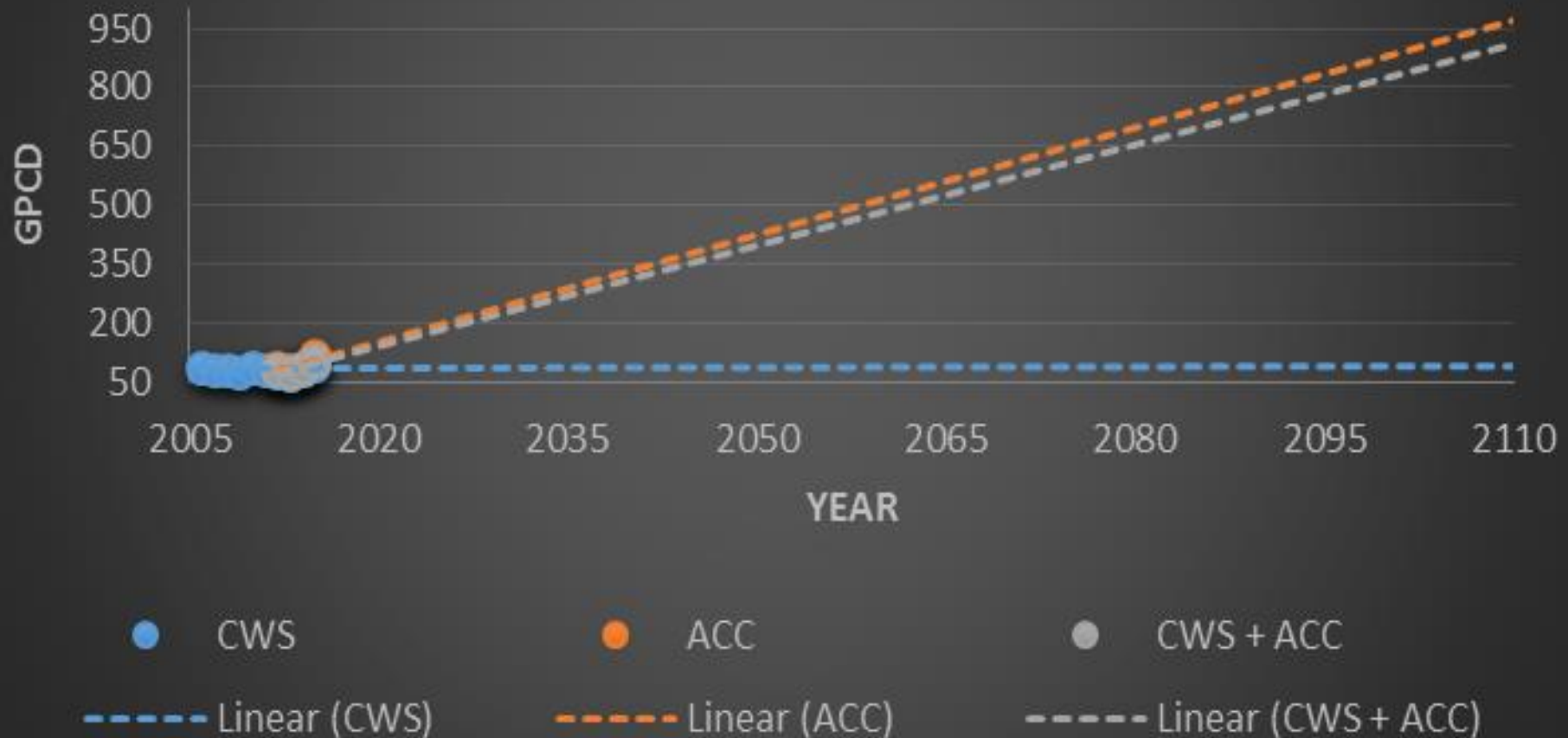


3. GPCD Projections

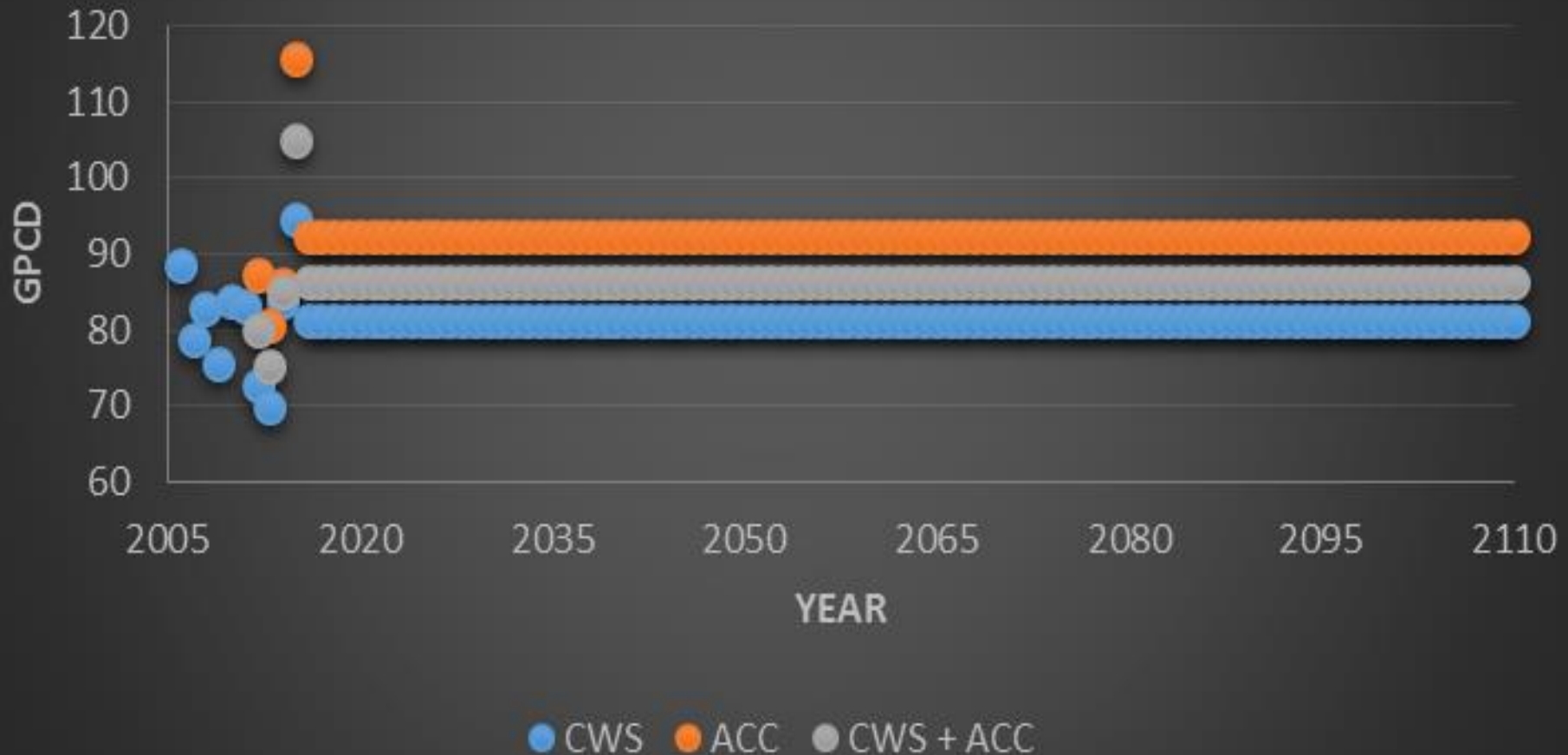
1. GPCDs were projected 2 ways:

1. Extrapolating through 2110 with a trend line based on the historical data
2. Averaging the historical GPCDs and holding that value constant through 2110

1. West Basins GPCD Projections (2006-2110) - Trendline



2. West Basins GPCD Projections (2006-2110) - Held Constant



3. GPCD Projections

2. The projected GPCDs were converted to annual Acre Feet

$$\frac{(population)(365\ days)(GPCD)}{325,851\ gallons}$$

3. GPCD Projections

GPCD to Acre Feet/Year With Positive Trendline

Year	2010		2035		2060		2085		2110	
	GPCD	AF/Year	GPCD	AF/Year	GPCD	AF/Year	GPCD	AF/Year	GPCD	AF/Year
ACC	92.41	651.02	288.17	2,749.58	515.58	6,327.82	742.99	11,156.05	970.40	17,231.35
CWS	81.34	573.06	82.90	790.96	84.49	1,036.93	86.08	1,292.46	87.67	1,556.71
ACC + CWS	86.88	612.04	270.13	2,577.37	483.36	5,932.30	696.59	10,459.30	909.82	16,155.62

GPCD to Acre Feet/Year Held Constant

Year	2010		2035		2060		2085		2110	
	GPCD	AF/Year	GPCD	AF/Year	GPCD	AF/Year	GPCD	AF/Year	GPCD	AF/Year
ACC	92.41	651.02	92.41	881.73	92.41	1,134.17	92.41	1,387.55	92.41	1,640.93
CWS	81.34	573.06	81.34	776.14	81.34	998.35	81.34	1,221.39	81.34	1,444.43
ACC + CWS	86.88	612.04	86.27	823.10	86.27	1,058.76	86.27	1,295.29	86.27	1,531.82

Comparative Data

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Area	Baseline WRDC Data		
	2005 Demand (AF)	2005 Population	2005 GPCD
West Basins	983	5,769	152
Phoenix AMA	1,025,478	3,701,697	247

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Basin	Projected Municipal Demand by Basin through 2110		
	2035 Demand (AF)	2060 Demand (AF)	2110 Demand (AF)
Butler Valley	0	0	0
Harquahala INA	245	354	652
McMullen Valley	970	1,173	1,588
Ranegras Plain	392	482	595
Tiger Wash	0	0	0
Total	1,607	2,009	2,835

¹Data Source: WRDC Final Report

²Data Source: WRDC Final Report

Thoughts?

- Which data set would you prefer to use?
- Which projection do you prefer?
- Is there anything you agree or disagree with?

Questions?

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